

IT IS CLAIMED:

1. An immunostimulatory fusion protein, comprising:
a polypeptide or protein antigen sequence component and a sequence component derived
5 from the intracellular domain of the HER-2 protein where said immunostimulatory fusion
protein is effective to elicit a cellular immune response to the polypeptide or protein antigen
sequence component of the fusion protein.
2. The immunostimulatory fusion protein of claim 1, wherein the HER-2 intracellular
10 domain sequence component has the sequence presented as SEQ. ID. NO: 25.
3. The immunostimulatory fusion protein of claim 1, wherein the polypeptide or protein
component is associated with tumor cells.
- 15 4. The immunostimulatory fusion protein of claim 1, wherein said fusion protein is
produced by translation of a continuous nucleic acid coding sequence.
5. The immunostimulatory fusion protein of claim 1, wherein the fusion protein is
20 produced by chemical coupling.
6. The immunostimulatory fusion protein of claim 1, wherein the polypeptide or protein
component is the mature HER-2 membrane distal extracellular domain sequence presented as
SEQ. ID. NO: 23.
- 25 7. The immunostimulatory HER-2 fusion protein of claim 6, where the HER-2 fusion
protein is selected from the group consisting of HER500 (SEQ ID NO: 1), HER500•hGM-CSF
(SEQ ID NO: 2), HER500* (SEQ ID NO:3) and HER500*•rGM-CSF (SEQ ID NO: 4).
8. The immunostimulatory HER-2 fusion protein of claim 7, where the fusion protein is
30 HER500•hGM-CSF (SEQ ID NO: 2).
9. The immunostimulatory HER-2 fusion protein of claim 1, where the cellular immune
response is a dendritic cell-induced, T cell-mediated immune response.
- 35 10. An immunostimulatory fusion protein composition, comprising:
dendritic cells superactivated by *in vitro* exposure to an immunostimulatory fusion
protein of claim 1.
11. An immunostimulatory fusion protein composition according to claim 10, further
40 comprising the immunostimulatory fusion protein of claim 1.

12. A method of producing superactivated DC, by exposure to an immunostimulatory fusion protein, comprising:

5 exposing a dendritic cell (DC) or dendritic cell precursor (DCP) to an immunostimulatory fusion protein comprising a polypeptide or protein antigen sequence component and a sequence component derived from the intracellular domain of the HER-2 protein, in a manner effective to result in a cellular immune response to the polypeptide or protein antigen sequence component of the fusion protein.

10 13. The method of claim 12, where said exposing takes place *in vitro*.

14. The method of claim 12, where said exposing takes place *in vivo*.

15 15. A method of treating cancer where the cancer is associated with a particular antigen, comprising:

(i) exposing an immunostimulatory fusion protein comprising a polypeptide or protein antigen sequence component and a sequence component derived from the intracellular domain of the HER-2 protein to a dendritic cell *ex vivo*; and

20 (ii) administering said exposed superactivated DC to a patient diagnosed with said cancer in a manner effective to result in a cellular immune response to the polypeptide or protein antigen sequence component of the fusion protein.

25 16. The method of claim 15 where the cancer is breast carcinoma, ovarian cancer or colon cancer and the polypeptide or protein antigen sequence component of the immunostimulatory fusion protein is the mature HER-2 membrane distal extracellular domain sequence presented as SEQ. ID. NO: 23.

17. The method of claim 15 or 16, further comprising:
administering said immunostimulatory fusion protein to the patient.

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18. A method of treating cancer where the cancer is associated with a particular antigen, comprising:

35 administering an immunostimulatory fusion protein having a polypeptide or protein antigen sequence component and a sequence component derived from the intracellular domain of the HER-2 protein to a patient diagnosed with said cancer in a manner effective to result in a cellular immune response to the polypeptide or protein antigen sequence component of the fusion protein.

40 19. The method of claim 18 where the cancer is breast carcinoma, ovarian cancer or colon cancer and the polypeptide or protein antigen sequence component of the immunostimulatory fusion protein is the mature HER-2 membrane distal extracellular domain sequence presented as SEQ. ID. NO: 23.